UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,334	03/23/2004	Akihiro Ozeki	008312-0308961	2193

909 7590 07/16/2008

PILLSBURY WINTHROP SHAW PITTMAN, LLP
P.O. BOX 10500
MCLEAN, VA 22102

EXAMINER	
PARSONS, THOMAS H	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
07/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/806,334	OZEKI, AKIHIRO	
	Examiner	Art Unit	
	THOMAS H. PARSONS	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-3, 6-9, 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

This is in response to the Amendment filed 2 June 2008.

(Previous) DETAILED ACTION

Specification

1. The objections to the disclosure because of minor informalities have been withdrawn in view of Applicants' Amendment to the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2-3 and 7-9 **stand** rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (6,057,051) in view of Tsutsumi et al. (5,229,222).

Claim 2: Uchida et al. in Figures 1 and 2 an electronic apparatus (1) comprising:

a body (3);

a fuel cell (2) which is housed in the body (3);

a housing unit which is provided in the body and which enables a first fuel tank (5) holding fuel for the fuel cell to be housed in the body (as shown in Figure 2, the fuel tank 5 would obviously be housed in a housing unit). See abstract and col. 5: 54-col. 7: 58.

Uchida et al. do not disclose a connector unit which is provided on the body and which enables a fuel tank unit capable of housing a second fuel tank holding fuel for the fuel cell to be connected to a housing for the body.

Tsutsami et al. in Figures 1, 4-6 and 13 disclose a second fuel tank which removably provided (i.e. the tank is replaceable) to the body and which holds fuel for the fuel cell. In particular, Tsutsumi et al. disclose that a second tank is connected a first tank, and that the fuel cell system can supply hydrogen gas from the first tank while the second tank is being replaced (col. 8: 6-18). See also col. 6: 10-col. 9: 20, and col. 13: 38-col. 14: 29. Tsutsumi et al. further disclose a connector unit (44) which is provided on the body which would obviously enable a fuel tank unit capable of housing a second fuel tank holding fuel for the fuel cell to be connected to a housing for the body.

Uchida et al. do not disclose a liquid supply unit configured to feed the fuel in the second fuel tank to the fuel cell without permitting the fuel to pass through the first fuel tank, when the fuel tank unit is installed.

Tsutsumi et al. in Figure 13 further disclose a liquid supply unit configured to feed the fuel in the second fuel tank (65) to the fuel cell without letting the fuel pass through the first fuel tank (66), when the fuel tank unit is installed. In particular, Tsutsumi et al. disclose that at startup, the fuel gas supply valve 67 is opened (valve 68 is obviously closed) to desorb the hydrogen gas from the first hydrogen storing device 65 and to supply the hydrogen gas to the anode 22, whereby power generation is started.

Uchida et al. do not disclose a setting unit configured to set the order in which the first fuel tank and the second fuel tank are used. However, Uchida et al. disclose a controller

configured to control a flow of the hydrogen from the hydrogen storage unit to control an operation of a fuel cell in the fuel cell body. Further, Tsutsumi et al. disclose a setting unit (i.e. controller) configured to set one of the second fuel tank to supply fuel to the fuel cell col. 3: 56-57). The controller of Uchida et al. in combination with the first and second fuel tank of Tsutsumi et al., as shown in Figure 13, would obviously be configured to set the order in which the tanks are used depending upon the pressure of each tank, and the operating state (start-up or steady-state) of the fuel cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the electronic apparatus of Uchida et al. by providing the connector and the liquid supply unit of Tsutsumi et al. because Tsutsumi et al. teach a connector and liquid supply unit that would have provided for the replacement of a second tank second tank so as to provide a fuel cell system with the capability of generating power smoothly even during the replacement of the hydrogen and to maintain continuous and steady power generation thereby realizing a safe operation, a higher power generating efficiency and a lower maintenance cost.

Claim 3: The rejection of claim 3 is as set forth above in claim 2 wherein further Tsutsumi et al. in Figures 1 and 4-6 disclose a liquid supply unit configured to feed the fuel in the second fuel tank (2) to the first fuel tank (5), when the fuel tank unit is installed.

Claim 7: The Uchida et al. combination disclose mounting the fuel tank unit to the body but are silent as to a fuel tank unit installed on a side of the body.

Claim 8: The Uchida et al. combination disclose mounting the fuel tank unit to the body but are silent as to a fuel tank unit installed on a back of the body.

Claim 9: The Uchida et al. combination disclose mounting the fuel tank unit to the body but are silent as to a fuel tank unit installed on an underside of the body.

However, it would have been an obvious matter of design choice to rearrange the position of the fuel tank unit to a back, a side, or an underside as it has been held unpatentable that shifting the position of the fuel tank unit would not have modified the operation of the fuel cell. See MPEP 2144.04, "Rearrangement of Parts".

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (6,057,051) in view of Tsutsumi et al. (5,229,222) as applied to claim 2 above, and further in view of JP 2002-321682 (hereafter, JP '682).

Uchida et al. and Tsutsumi et al. are as applied, argued, and disclosed above, and incorporated herein.

Claim 6: The Uchida et al. combination does not disclose a display provided on the body; and a display control unit configured to display a state of use of each of the first fuel tank and the second fuel tank.

JP '682 discloses a known display (350 provided on body); and a display control unit (303) configured to display a state of use of the fuel tank (paragraph [0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the electronic apparatus of the Uchida et al. combination by incorporating the display of JP '682 because JP '682 discloses a display the would have provide an indication of the fuel consumption thereby improving the overall control and cost of fuel consumption.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida et al. (6,057,051) in view of Tsutsumi et al. (5,229,222).

The Uchida et al combination discloses a method of controlling a power supply for an electronic apparatus including a fuel cell housed in its body, a housing unit which enables a first fuel tank holding fuel for the fuel cell to be housed in the body, a connector unit which enables a fuel tank unit capable of housing a second fuel tank holding fuel for the fuel cell to be connected to a housing for the body, and a liquid supply unit which feeds the fuel in the second fuel tank to the fuel cell without permitting the fuel to pass through the first fuel tank when the fuel tank unit is installed, the method comprising: setting the order in which the first fuel tank and the second fuel tank are used.

In particular, Uchida et al. in Figures 1 and 2 an electronic apparatus (1) comprising:

a body (3);

a fuel cell (2) which is housed in the body (3);

a housing unit which is provided in the body and which enables a first fuel tank (5) holding fuel for the fuel cell to be housed in the body (as shown in Figure 2, the fuel tank 5 would obviously be housed in a housing unit). See abstract and col. 5: 54-col. 7: 58.

Uchida et al. do not disclose a connector unit which is provided on the body and which enables a fuel tank unit capable of housing a second fuel tank holding fuel for the fuel cell to be connected to a housing for the body.

Tsutsami et al. in Figures 1, 4-6 and 13 disclose a second fuel tank which removably provided (i.e. the tank is replaceable) to the body and which holds fuel for the fuel cell. In

particular, Tsutsumi et al. disclose that a second tank is connected a first tank, and that the fuel cell system can supply hydrogen gas from the first tank while the second tank is being replaced (col. 8: 6-18). See also col. 6: 10-col. 9: 20, and col. 13: 38-col. 14: 29. Tsutsumi et al. further disclose a connector unit (44) which is provided on the body which would obviously enable a fuel tank unit capable of housing a second fuel tank holding fuel for the fuel cell to be connected to a housing for the body.

Uchida et al. do not disclose a liquid supply unit configured to feed the fuel in the second fuel tank to the fuel cell without permitting the fuel to pass through the first fuel tank, when the fuel tank unit is installed.

Tsutsumi et al. in Figure 13 further disclose a liquid supply unit configured to feed the fuel in the second fuel tank (65) to the fuel cell without letting the fuel pass through the first fuel tank (66), when the fuel tank unit is installed. In particular, Tsutsumi et al. disclose that at startup, the fuel gas supply valve 67 is opened (valve 68 is obviously closed) to desorb the hydrogen gas from the first hydrogen storing device 65 and to supply the hydrogen gas to the anode 22, whereby power generation is started.

Uchida et al. do not disclose a setting unit configured to set the order in which the first fuel tank and the second fuel tank are used. However, Uchida et al. disclose a controller configured to control a flow of the hydrogen from the hydrogen storage unit to control an operation of a fuel cell in the fuel cell body. Further, Tsutsumi et al. disclose a setting unit (i.e. controller) configured to set one of the second fuel tank to supply fuel to the fuel cell col. 3: 56-57). The controller of Uchida et al. in combination with the first and second fuel tank of Tsutsumi et al., as shown in Figure 13, would obviously be configured to set the order in which

the tanks are used depending upon the pressure of each tank, and the operating state (start-up or steady-state) of the fuel cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the electronic apparatus of Uchida et al. by providing the connector and the liquid supply unit of Tsutsumi et al. because Tsutsumi et al. teach a connector and liquid supply unit that would have provided for the replacement of a second tank second tank so as to provide a fuel cell system with the capability of generating power smoothly even during the replacement of the hydrogen and to maintain continuous and steady power generation thereby realizing a safe operation, a higher power generating efficiency and a lower maintenance cost.

Further, Tsutsumi et al. disclose , "*At the start of the system*, the fuel gas supply valve 67 is opened to desorb the hydrogen gas from the first hydrogen storing device 65 and to supply the hydrogen gas to the anode 22, whereby power generation is started. The temperature of the hydrogen absorbing alloy in the hydrogen storing device 65 would usually be lowered by the desorption of the hydrogen gas. However, since the hydrogen absorbing alloy exchanges heat with the air by the heat exchanger 69 in this construction, the temperature decline cannot take place and so the hydrogen gas is smoothly desorbed without fail.

During the steady-state operation, the hydrogen absorbing alloy in the hydrogen storing device 66 exchanges heat with the combustion gas through heat exchanger 70, whereby the temperature of the hydrogen absorbing alloy is gradually raised. When the inner pressure of the hydrogen storing device 66 exceeds that of the hydrogen storing device 65, the fuel gas supply valve 68 is opened. In this way, the hydrogen gas is supplied from the hydrogen absorbing alloy

in the hydrogen storing device 66 to the anode 22. Such hydrogen gas is used for the power generation. The hydrogen gas is also supplied to the hydrogen gas absorbing alloy in the hydrogen storing device 65, where the hydrogen absorbing alloy absorbs the hydrogen gas."

Therefore, the method of the Uchida et al. combination would obviously comprise setting the order in which the first fuel tank and the second fuel tank are used depending upon the pressure of each tank, and the operating state (start-up or steady-state) of the fuel cell.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Uchida et al. with the setting step of Tsutsumi et al. because Tsutsumi et al. teach a setting that that would have provide a fuel cell system with the capability of generating power smoothly even during the replacement of the hydrogen and to maintain continuous and steady power generation thereby realizing a safe operation, a higher power generating efficiency and a lower maintenance cost.

Response to Arguments

6. Applicant's arguments filed 2 June 2008 have been fully considered but they are not persuasive.

The Applicant argues that the Uchida et al. combination does not teach or suggest a setting unit configured to set the order in which the first fuel tank and the second fuel tank are used.

In response, Tsutsumi et al. disclose , "*At the start of the system*, the fuel gas supply valve 67 is opened to desorb the hydrogen gas from the first hydrogen storing device 65 and to supply the hydrogen gas to the anode 22, whereby power generation is started. The temperature of the

hydrogen absorbing alloy in the hydrogen storing device 65 would usually be lowered by the desorption of the hydrogen gas. However, since the hydrogen absorbing alloy exchanges heat with the air by the heat exchanger 69 in this construction, the temperature decline cannot take place and so the hydrogen gas is smoothly desorbed without fail.

During the steady-state operation, the hydrogen absorbing alloy in the hydrogen storing device 66 exchanges heat with the combustion gas through heat exchanger 70, whereby the temperature of the hydrogen absorbing alloy is gradually raised. When the inner pressure of the hydrogen storing device 66 exceeds that of the hydrogen storing device 65, the fuel gas supply valve 68 is opened. In this way, the hydrogen gas is supplied from the hydrogen absorbing alloy in the hydrogen storing device 66 to the anode 22. Such hydrogen gas is used for the power generation. The hydrogen gas is also supplied to the hydrogen gas absorbing alloy in the hydrogen storing device 65, where the hydrogen absorbing alloy absorbs the hydrogen gas."

Further, Uchida et al. disclose a controller configured to control a flow of the hydrogen from the hydrogen storage unit to control an operation of a fuel cell in the fuel cell body. The controller of Uchida et al. in combination with the first and second fuel tank of Tsutsumi et al., as shown in Figure 13, would obviously be configured to set the order in which the tanks are used depending upon the alloys and the pressure of each tank. For example, the controller would set the order depending, in particular, upon the alloy and it associated equilibrium in the second tank. If tank 2 has a higher equilibrium when installed, the controller sets the order such that tank 2 is used first. If, on the other hand, tank 2 has a lower equilibrium when installed, the controller would set the order such that tank 1 is used first.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS H. PARSONS whose telephone number is (571)272-1290. The examiner can normally be reached on M-F (7:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795

Thomas H Parsons
Examiner
Art Unit 1795

***